

(12) UK Patent Application (19) GB (11) 2 323 291 (13) A

(43) Date of A Publication 23.09.1998

(21) Application No 9804322.7

(22) Date of Filing 03.03.1998

(30) Priority Data

(31) 9705586

(32) 18.03.1997

(33) GB

(71) Applicant(s)

Smiths Industries Public Limited Company
(Incorporated in the United Kingdom)
765 Finchley Road, LONDON, NW11 8DS,
United Kingdom

(72) Inventor(s)

Eric Pagan

(74) Agent and/or Address for Service

J M Flint
765 Finchley Road, LONDON, NW11 8DS,
United Kingdom

(51) INT CL⁶

A61M 16/04

(52) UK CL (Edition P)

A5R RGEX

(56) Documents Cited

None

(58) Field of Search

UK CL (Edition P) A5R RGEX

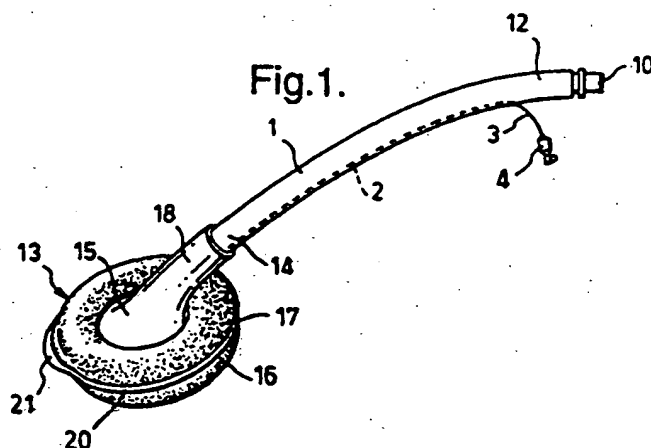
INT CL⁶ A61M 16/00 16/04

Online:WPI

(54) Abstract Title

Laryngeal mask assembly

(57) The mask portion 13 at the patient end of a laryngeal mask assembly is formed by a mount member having an outwardly projecting, oval plate 20 and by two separate semi-annular cuffs 16 and 17 bonded to opposite sides of the plate. An inflation lumen 2 opens into one cuff 17, the plate 20 having several holes 22 through it so that the inflation fluid flows also to the other cuff 16.



GB 2 323 291 A

I-27 f

Fig.1.

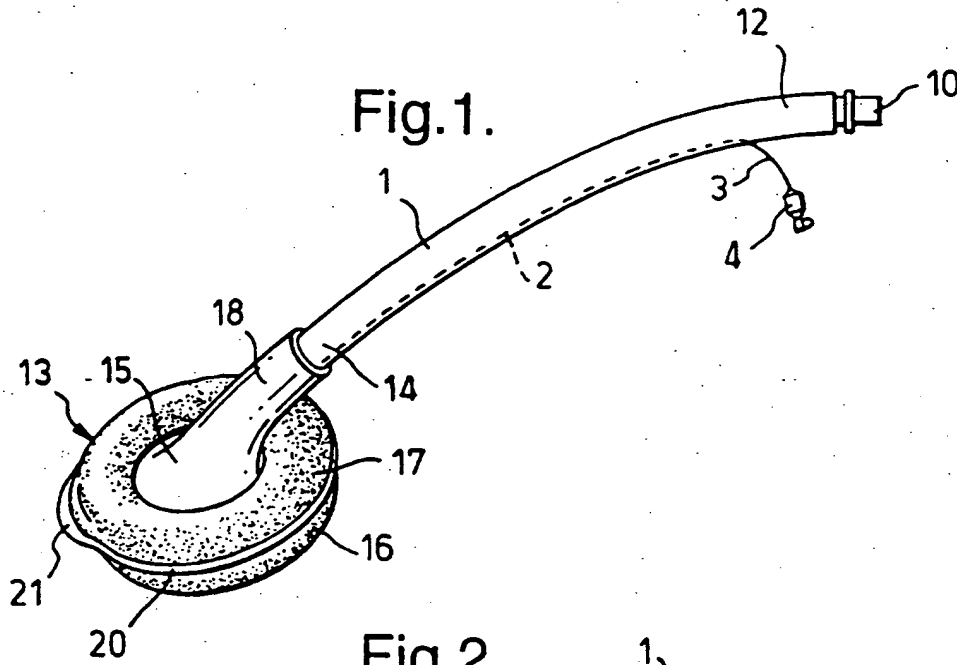


Fig.2.

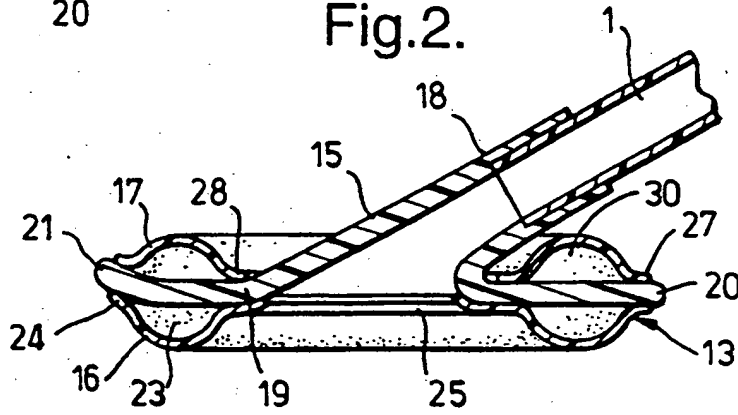
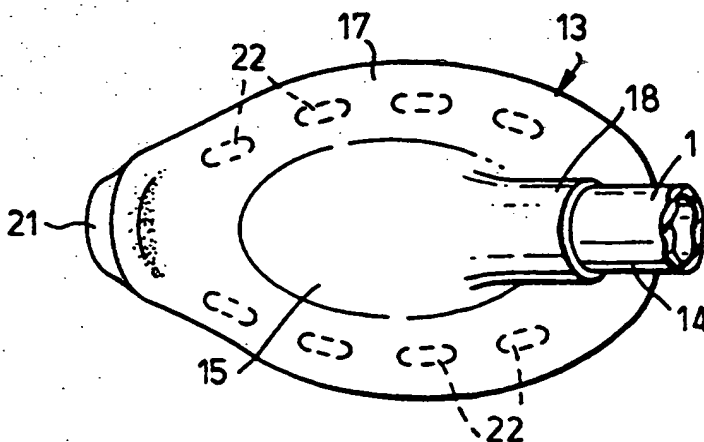


Fig.3.



Laryngeal Mask Assemblies

This invention relates to laryngeal mask assemblies.

It is common practice to use an airway known as a laryngeal mask for the administration of anaesthetic and ventilation gases to a patient. These airways comprise a tube with an inflatable mask or cuff at one end, the tube being inserted in the patient's mouth so that one end is located in the hypopharynx and so that the mask forms a seal in this region with the surrounding tissue. Laryngeal masks are described in, for example, US 5355879, US 5305743, US 5297547, US 5282464, GB 2267034, US 5249571, US 5241956, US 5303697, GB 2249959, GB 2111394, EP 448878, US 4995388, GB 2205499, GB 2128561 and GB22988797.

Laryngeal masks have several advantages over endotracheal tubes, which are longer and seal with the trachea below the vocal folds. One problem with laryngeal mask airways, however, is that it is difficult to provide the cuff, which is of relatively complex shape, at low cost.

It is an object of the present invention to provide an improved laryngeal mask assembly.

According to the present invention there is provided a laryngeal mask assembly comprising a tube with a mask portion at its patient end, the tube having an opening into the centre of the mask portion, the mask portion including a mount member joined with the patient end of the tube, the mount member having an outwardly-projecting plate member, the mask portion including a first cuff member attached to one side of the plate member, a second cuff member attached to the opposite side of the plate member, and at least one fluid passage extending between the two cuff members, and the assembly including an inflation passage

opening into one of the cuff members such that fluid supplied to the one cuff member is communicated to both the cuff members via the fluid passage between the cuffs

The fluid passage may extend through the plate member and is preferably provided by a plurality of holes through the plate member. One of the cuff members may have inner and outer rims, the inner and outer rims being bonded to one side of the plate member to define an annular space between the cuff member and the plate member. Preferably, both the cuff members have inner and outer rims bonded to respective opposite sides of the plate member. The first and second cuffs may have different properties from one another.

A laryngeal mask airway assembly according to the present invention, will now be described, by way of example, with reference to the accompanying drawing, in which:

Figure 1 is a side elevation view of the assembly;

Figure 2 is a sectional side elevation view of the patient end of the assembly to an enlarged scale; and

Figure 3 is a view from above of the patient end of the assembly.

The assembly comprises a bendable tube 1 of a plastics material, such as PVC, with a coupling 10 at its machine end 12. The tube 1 is curved along its length and has a mask portion 13 at its patient end 14.

The tube 1 is extruded with an inflation lumen 2 within its wall. The lumen 2 is connected towards the machine end of the assembly to an inflation line 3 with an inflation

indicator and connector 4. The opposite, patient end of the inflation lumen 2 opens into the mask portion 13.

The mask portion 13 comprises a mount member 15 and two cuff members 16 and 17. The mount member 15 is moulded from a bendable plastics material, such as PVC. The mount member 15 has a hollow cylindrical sleeve 18 at its rear end, in which the forward, patient end 14 of the tube 1 is inserted and joined. The forward, patient end 19 of the mount member 15 has a substantially flat plate 20 with a generally elliptical or egg-shape outline, which projects outwardly of the sleeve 18 at an angle of about 30°. The forward edge of the plate 20 is curved upwardly to form a leading tip 21. Several air vent holes 22 are spaced around the plate 20 and allow air to flow through the thickness of the plate.

The cuff members 16 and 17 are both blow moulded from a flexible, resilient plastics material, such as PVC, polyurethane, silicone, EVA, TPE, polyether block amide or the like. The cuff members could be formed in other ways, such as by vacuum forming, pressure vacuum forming or injection moulding. Alternatively, the cuff members could be flat sheets, which might have elastomeric properties or be laminates with reinforcing. The lower, patient-end cuff member 16 has a semi-annular shape with a periphery conforming to the outline of the plate 20. An annular recess or channel 23 extends around the upper surface of the cuff, within a peripheral rim 24. In the centre of the cuff member 16 there is an aperture 25 of oval shape, which conforms to the shape of the opening of the patient end of sleeve 18. The cuff member 16 is bonded to the lower, patient side of the plate 20 both around the rim 24 and around the edge of the aperture 25 to enclose an annular space between the lower surface of the plate and the channel 23. The upper cuff member 17 is similar in shape to the lower cuff member 16 but is arranged upside down. The upper cuff member 17 has a peripheral rim 27 and an inner rim 28 bonded to the upper surface of the plate 20, on either side of an annular channel 30. The upper channel 30 communicates with the inflation lumen 2 by means of a

channel in the mount member 15, or an interconnecting tube, so that gas supplied to the inflation lumen inflates the upper cuff member 17 and, because the gas flows through the air vents 22, it also inflates the lower cuff member 16.

The leading tip 21 projects forwardly slightly beyond the upper and lower cuff members 16 and 17 so as to provide a stiffer leading edge to help guide the mask portion 13 into the correct location.

By forming the cuff in two parts 16 and 17, it facilitates manufacture and assembly, enabling a wide range of different shapes and sizes to be produced. It also enables the cuff to have different properties on its upper and lower sides.

CLAIMS

1. A laryngeal mask assembly comprising a tube with a mask portion at its patient end, the tube having an opening into the centre of the mask portion, wherein the mask portion includes a mount member joined with the patient end of said tube, wherein the mount member has an outwardly-projecting plate member, wherein the mask portion includes a first cuff member attached to one side of the plate member, a second cuff member attached to the opposite side of the plate member, and at least one fluid passage extending between said two cuff members, and wherein the assembly includes an inflation passage opening into one of said cuff members such that fluid supplied to said one cuff member is communicated to both said cuff members via said fluid passage between said cuffs.
2. A laryngeal mask assembly according to Claim 1, wherein said fluid passage extends through said plate member.
3. A laryngeal mask assembly according to Claim 2, wherein said fluid passage is provided by a plurality of holes through said plate member.
4. A laryngeal mask assembly according to any one of the preceding claims, wherein one of said cuff members has inner and outer rims bonded to one side of said plate member to define an annular space between said cuff member and said plate member.
5. A laryngeal mask assembly according to Claim 4, wherein both said cuff members have inner and outer rims bonded to respective opposite sides of said plate member.

6. A laryngeal mask assembly according to any one of the preceding claims, wherein said first and second cuff members have different properties from one another.
7. A laryngeal mask assembly substantially as hereinbefore described with reference to the accompanying drawings.
8. Any novel and inventive feature as hereinbefore described.



The
Patent
Office

2

Application No: GB 9804322.7
Claims searched: 1-7

Examiner: Peter Davey
Date of search: 14 May 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.P): A5R (RGEX)

Int CI (Ed.6): A61M 16/00 16/04

Other: Online: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
	NONE	

- | | |
|---|--|
| X Document indicating lack of novelty or inventive step | A Document indicating technological background and/or state of the art. |
| Y Document indicating lack of inventive step if combined with one or more other documents of same category. | P Document published on or after the declared priority date but before the filing date of this invention. |
| & Member of the same patent family | E Patent document published on or after, but with priority date earlier than, the filing date of this application. |